handle, but personally I would hesitate to perform an artificial pneumothorax upon them as a remedial measure. My method of treating hemorrhage has always consisted of very little interference. I aim to quiet the patient in every way possible, keep him perfectly at rest physically. If the hemorrhage is large, not even allowing him to move his hand or foot, quieting his nervousness, and aiming to relieve him of all fear. By so doing we take away those things which raise blood pressure and in this way aid in stopping the hemorrhage. I do not believe in examining a patient during hemorrhage, in fact, I do not turn the patient over nor allow him to move from side to side, but keep him lying quietly. Personally I have had considerable difficulty in being positive that I was locating the point of hemorrhage. As soon as the blood trickles out into the lung it usually finds its way into distant parts from the point of bleeding and unless there is a constant oozing which produces a localized point of constant moisture, it is a very difficult problem to be sure that we are right in locating it, and if the hemorrhage is large in size at all the blood is inclined to find its way into both lungs and makes it very uncertain where the bleeding is coming from. I am not in the habit of using much morphin in the treatment of hemorrhage. I use as little as possible, and never give it unless the patient is extremely nervous or the cough is extremely troublesome. When I do use it I employ small doses, usually giving 1/16 grain hypodermically. I find that this has a quieting action without benumbing the sensitiveness of the bronchi and favoring pneumonia. I rely more particularly on such measures as are known to reduce blood pressure, the nitrates and especially veratrum viride. I have never felt that the coagulability of the blood is at fault. I have yet to see a case where I felt that it was necessary to increase coagulability, on the contrary we very often find it difficult for a patient to get the blood out of his mouth, it coagulates so quickly. If pneumothorax were to be produced we would have to have certain conditions present. We could not have an adherent pleura, and the other lung should be practically sound, a condition which is not usually found, especially if the disease has extended beyond the early stage. I believe that the operator should be throughly conversant with the patient. I do not believe it would be wise to undertake this procedure upon a patient whom he was seeing for the first time, and the operation to my mind should be performed only in a hospital or sanatorium where the patient would be under the constant care of the physician. While I would not want to discourage anything that offers benefit to these cases, I personally should prefer to follow out treatment along the lines which have given me good success and not endangered the patient.

Dr. H. D'Arcy Power, San Francisco: While I have no personal experience of arresting hemoptysis in the manner advocated, yet I realize that we are here dealing with a method that is at least physiologically sound. This is by no means always the case with lung therapy, and we still find men using ergot and adrenalin, notwithstanding that it was definitely demonstrated by the careful experimental work of Dr. Carl Wiggens that the total blood flow through the lung is increased by the administration of adrenalin. That artificial pneumothorax has dangers may well be admitted, but so has persistent hemorrhage; and be it remembered it is just as easy to decompress as compress the lung if a mistake is made.

Dr. Rothschild, closing discussion: Dr. Pottenger is correct in two respects, namely, that it is wise to interfere as little as possible in cases which have hemorrhages, and also that the method is not one for the general practitioner. But I am not talking about cases which bleed a little and then stop; or about cases which have a severe hemorrhage, perhaps another, and then stop; in such cases I should not think of operating. I do not by any means want to create the impression that as soon as one of my patients shows blood in the sputum I produce an artificial pneumothorax. If the hemorrhage is easily controlled, and does not recur too often, we treat it in the usual old way; but I am talking chiefly about cases in which the hemorrhages are very profuse, and obstinate in their recurrence. It is also useless for me to state that I do not move the patients unnecessarily, and that if the patient is brought into the operating-room, it is done most carefully. That is only common sense, and any man, with any experience at all, would be careful about those things. I also agree with Dr. Pottenger that the operation is not one for the general practitioner, as stated before, because he has neither the apparatus nor the experience to perform it. It would be advisable for the general practitioner to send such cases to a sanatorium. But I do believe that every institution for the treatment of tuberculosis should have an apparatus for the production of artificial pneumothorax ready for use. I do not agree with Dr. Pottenger or Dr. Browning in regard to the limitations of the operation. The publications which have appeared on the subject lately bear me out in this, and the latest work of Spengler and Brauer, which I have mentioned before, has shown remarkable results in cases where both sides have been affected, one, of course, not extensively. I must repeat that I am not talking about the treatment of the tuberculous infection itself with artificial pneumothorax; but I am talking about cases which have hemorrhages, and in which we have no choice in regard to the means of stopping them. I would rather produce an artificial pneumothorax, even if the case is not a proper one according to the indications for the operation, than allow a patient to die without trying to stop the hemorrhage by this means. In regard to the pressure which I am using during operation, I try to get a neutral pressure with the first inflation. We usually stop when the manometer shows 1-2 cm. positive pressure during inhalation, and during exhalation 1-2 cm. negative pressure. With the second or third inflation, I try to produce a positive pressure of 2-6 cm.

In regard to Dr. Murphy's case, which Dr. Browning mentions, it is of course impossible for me to explain the reason for the frequent hemorrhages after the operation. Might it not be possible that they came from the other side? I can only say that in all my cases, the artificial pneumothorax has stopped the hemorrhages promptly and absolutely. We keep the lung compressed for a year or longer, the time depending entirely upon the condition of the patient. I believe that we are undoubtedly justified in producing an artificial pneumothorax in profuse hemorrhage, even when only a small area of the lung is involved, if the hemorrhages are obstinate, and if the operation is not otherwise contraindicated.

THE HYPODERMIC USE OF HEXAMETHYLENAMIN. $(CH_2)_6N_4$.

By F. F. GUNDRUM, M. D., Sacramento.

The first work published concerning the excretion of hexamethylenamin, when used on laboratory animals and clinically, was that of Crowe,[1] in 1908. He was able to show in the laboratory that, following the administration of hexamethylenamin by mouth, the drug was excreted in the bile, pancreatic juice, saliva, milk, and urine of dogs. After the administration of 0.5 G by mouth to a rabbit, a positive test was obtained from the blood within fifteen minutes, although the maximum quantity,

judged by colorimetric methods, appeared about five to eight hours after ingestion. Clinically, he was able to prove its presence in the bile, urine, cerebro-spinal fluid, joint fluid, and a pleural effusion following the giving of 10 gr. to 75 gr. a day. He demonstrated a marked germicidal action in cases of gall-bladder fistula, the number of bacteria diminishing rapidly and ultimately disappearing completely so that no growth occurred on culture media.

Of special interest was a case of infection of the cerebro-spinal tract, purulent meningitis following an exploration, which cleared up under rather full doses. Following this work, many cases of infection of serous cavities were treated with hexamethylenamin, and a few reports have been published corroborating the work of Crowe. It was but a short step from the curative to the prophylactic exhibition of an agent whose effectiveness was apparently so definitely demonstrable. The custom was established on Dr. Cushing's service of giving from 30 to 60 grains by mouth to all cases with compound fractures affecting the meninges or central nervous system immediately upon admission to the hospital. On the general surgical service, Dr. Halsted's, 15 to 30 grains were given 1 to 2 hours before catheterization of a non-infected bladder whenever circumstances permitted.

While resident on Dr. R. T. Miller, Jr.'s, service at the St. Francis Hospital in Pittsburg, we followed the custom above mentioned, giving from 15 to 30 grains before catheterization and 30 to 60 gr. to cases of compound fracture of the skull, as soon as admitted to the hospital. One night, a case was brought in with a compound skull fracture, very dirty, but already vomiting and semi-comatose from increased intracranial pressure. The indication for hexamethylenamin seemed so urgent that the patient was given 30 grains hypodermatically at once, and the dose repeated upon his leaving the table after decompression and elevation of fragments. The ordinary tablets were merely boiled up in water and injected rather deeply into the thigh. I had considerable misgivings as to the amount of irritation which would be produced because it is comparatively easy to break hexamethylenamin down, liberating formaldehyde. No local irritation developed, and the patient recovered without a meningitis. A short time after that, an opportunity presented itself for using hypodermic injection upon an individual not mentally dulled, a case of acute retention, due to stricture of the urethra. He complained slightly of burning for fifteen or twenty minutes after the injection of 20 grains, but the following day all irritation had subsided.

The very slight irritation following the hypodermic use of hexamethylenamin has encouraged me to use it subcutaneously or intramuscularly whenever it is desirable to produce, if not an actively germicidal, an at least inhospitable medium for bacterial growth in any serous cavity, or the bile or urinary passages within a short space of time. This is particularly valuable if the patient is nauseated, comatose, or about to be operated upon when the post-anesthetic vomiting too frequently empties the stomach of any drug and often prevents medication by mouth for several hours.

The frequent, early and generous exhibition of hexamethylenamin, particularly in cerebro-spinal cases is of exceeding value in the prevention of meningeal infection. It is not often able to affect to anything like so great an extent a case of meningitis, once established. The hypodermic use, too, is often of great value to the internist, as in the following recent case under my care. Mr. A. suffering from tabes dorsalis, with relaxation of vesical and rectal sphincters coming on during a severe gastric crisis. He had persistent dribbling, but without retention. As a natural consequence, so far as the bladder was concerned, he developed a rather severe cystitis with considerable mucus, an alkaline urine and many bacilli of the colon and proteus groups. He was given 10 grains of hexamethylenamin three times per day hypodermatically for a period of two weeks, in addition to the usual daily irrigation with warm boric acid solution. No local disturbances followed the injections and no objective irritation was noted. From these few cases and from others not reported here, it has seemed good practice at times when an early exhibition of hexamethylenamin is indicated, as a prophylactic measure, for example where catherization or other genitourinary manipulation is necessary, and especially where meningeal, or possibly also joint infection is feared, to use the drug hypodermatically until such time as the administration by mouth can be taken up.

1. Crowe—Johns Hopkins Hosp. Bull., Vol. XIX, No. 205, April, 1908.

A REMARKABLE CASE OF CHICKEN-POX.

By EDWARD GRAY, M. D., Eldridge.

The case to be narrated was remarkable for the number and character of the complications and for the way in which it ended. We are so accustomed to thinking of varicella as a trivial ailment that it is a shock to find such a patient die.

Viola G., sixteen years of age, had been for several months an inmate of the Sonoma State Home (for the feeble minded) of California. She came to the Home because of epilepsy from which she had suffered since she was five years old, the seizures latterly being of a minor character. In addition to this she was choreic and had hypermetropic astigmatism. For this condition I recently prescribed corrective spectacles. The nervous twitching, when spoken to, was very apparent.

Her application-blank briefly records that she "had measles when five years old, caught cold, then typhoid fever and spells (epileptic) ever since." She distinctly improved after coming here and after a time was given some light work in the clothes-room.

Eight days after admission she had a series of epileptic seizures, the record standing simply "many"; for three months following, an average of 17 to 19 per month; then they decreased, for the last three months, to only two or three per month and these of light character. Her general health was therefore distinctly improved when on February 25, 1911, she was found to have varicella and was sent to our hospital. There it was noticed in a few hours' time that the patient was exceedingly nervous and restless, while the pocks were not numerous and itching hardly complained of. On this first night she was found jumping out of bed and wandering about the ward and next day she had to be restrained because of the excessive restlessness and nervousness. Succeeding this stormy period there was a time of petulance and then of apathy.